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PREDICTORS OF EXERCISE-INDUCED PULMONARY HYPERTENSION IN PATIENTS WITH PRESERVED LEFT VENTRICULAR EJECTION FRACTION

Poster Contributions
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Background: Exercise stress echocardiography show promise for the detection of pulmonary hypertension during exercise. Recent studies have shown that exercise-induced pulmonary hypertension is not uncommon in patients with preserved left ventricular ejection fraction (LVEF). However, there is limited data on predictors of exercise-induced pulmonary hypertension in these subjects, and its clinical implications are unclear.

Methods: Overall 1,404 patients were referred for exercise stress echocardiography with measurements of LV systolic and diastolic function, pulmonary artery systolic pressure (PASP) by 2-Dimensional and Doppler techniques. PASP was estimated from the systolic trans-tricuspid pressure gradients, adding an assumed right atrial pressure of 10mmHg and exercise-induced pulmonary hypertension was defined as PASP $\geq$ 50mmHg at exercise. Patients with positive exercise stress echocardiography, significant valvular heart disease, atrial fibrillation, or LVEF lower than 50% were excluded.

Results: In patients undergoing exercise stress echocardiography, 447 patients (32%) had pulmonary hypertension at exercise. Those subjects were older, more often male, and had higher body mass index and had shorter exercise duration. Multiple echocardiographic variables were significantly different between the two groups. In the multivariable analysis, independent predictors of exercise-induced pulmonary hypertension were age ($p<0.001$), RVSP at rest ($p<0.001$), E/e' ratio at exercise ($p=0.022$), and maximal systolic blood pressure at exercise ($p=0.014$). However, this multivariable model did not show any significant differences of exercise capacity (exercise duration or metabolic equivalents, METs) between the two groups.

Conclusions: In this large cross-sectional study, exercise-induced pulmonary hypertension in patients with preserved LVEF is independently associated with age, RVSP at rest, E/e'ratio and maximal systolic blood pressure at exercise.